

FACT SHEET FOR NPDES PERMIT WA-003207-7

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

SUMMARY

Kitsap County (the County) owns and operates a package wastewater treatment plant (WWTP) in Kingston. This WWTP uses contact stabilization (activated sludge) technology for secondary treatment system. The plant was constructed in 1974, and is many years past its design life and difficult to operate. The County is in the process of building a new treatment plant approximately one mile to the southwest of the existing plant. The new plant consists of an oxidation ditch (extended aeration) type secondary treatment system.

The existing plant will be demolished, and a new pump station will be constructed at the site. A force main from the new pump station to the new treatment plant will be constructed to transport incoming sewage to the new plant. In addition, the County is constructing a new outfall, which will discharge the (new) plant effluent into deep waters of Appletree Cove, Puget Sound. To reflect the new wastewater treatment process, new location, and revised effluent limitations and design criteria for the new WWTP, a new NPDES permit must be issued.

The existing WWTP operates under the terms and conditions of the existing NPDES permit number WA-002326-4. This fact sheet is for the (new) proposed permit for the new WWTP.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the Wastewater Discharge Permit Program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty (30) days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A—Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix E—Response to Comments.

GENERAL INFORMATION	
Applicant	Kitsap County Public Works
Facility Name and Address	Kingston Wastewater Treatment Plant (WWTP) 23125 South Kingston Road Kingston, WA 98346
Type of Treatment	Oxidation Ditch (Extended Aeration) – Secondary Treatment System
Discharge Location	Appletree Cove, Puget Sound Latitude: 47° 47' 20" N Longitude: 122° 29' 11" W
Water Body ID Number	WA-PS-0050

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BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

Kitsap County (the County) owns and operates a Wastewater Treatment Plant (WWTP) located in Kingston. The existing (package) contact stabilization (activated sludge) plant was constructed in 1974. This plant is many years past its design life and difficult to operate. The County is in the process of constructing a new oxidation ditch (extended aeration) plant approximately one mile to the southwest of the old plant. Following completion of the new plant, the County will demolish the existing plant. The County is also in the process of constructing a new pump station at the existing plant site and a force main from there to the new plant to transport the incoming sewage to the new plant. In addition, a new outfall is under construction, which will discharge the (new) plant effluent into deep waters of Appletree Cove, Puget Sound.

DESCRIPTION OF THE WASTEWATER COLLECTION SYSTEM

The wastewater collection system consists of 6-inch through 12-inch diameter sewers. Approximately 95 percent of the existing collection system was constructed in 1974. The original collection system was constructed primarily of asbestos-cement pipe, and short lengths of 10-inch and 12-inch diameter cast iron pipe. The remaining 5 percent of the collection system, built between 1978 and 1984, was constructed using 6-inch and 8-inch diameter PVC pipe. There are five lift stations in the collection system, including the new pump station number 71, which is under construction. The old beach front lift station number 41 located south of West Kingston Road pumps wastewater generated in the southern portion of the collection system. Lift station number 42 (Kingston Junior High School), lift station number 43 (Richard Gordon Elementary), and lift station number 52 (North Kitsap Transfer Facility – bus barn) are small, and operate when the schools are in session. They all pump wastewater to the lift station number 41, which in turn pumps it to the new pump station number 71. The (new) main pump station (number 71) will pump all of the wastewater to the new plant.

WASTEWATER SOURCES

Primary sources of wastewater tributary to the facility are domestic sewage from residential and light commercial activities in Kingston.

WASTEWATER CHARACTERISTICS

Wastewater received at the facility is fairly typical domestic wastewater with conventional pollutants and low levels of some metals. The influent and effluent monitoring data for the year 2003 are shown in the following table. The values reported in the table are average annual values.

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PARAMETER	INFLUENT		EFFLUENT	
	Concentration	lbs/day	Concentration	lbs/day
Flow	106,800 gpd	-----	106,800 gpd	-----
CBOD ₅	208 mg/L	185 lbs/day	19 mg/L	17 lbs/day
TSS	249 mg/L	222 lbs/day	26 mg/L	23 lbs/day
Fecal Coliform	-----	-----	332 cfu	-----
Arsenic	1.0 µg/L	0.001 lbs/day	0.0 µg/L	0.0 lbs/day
Cadmium	0.1 µg/L	0.0001 lbs/day	0.0 µg/L	0.0 lbs/day
Chromium	0.9 µg/L	0.001 lbs/day	0.1 µg/L	0.0001 lbs/day
Copper	41.3 µg/L	0.036 lbs/day	13.0 µg/L	0.011 lbs/day
Lead	2.2 µg/L	0.002 lbs/day	0.7 µg/L	0.001 lbs/day
Mercury	0.29 µg/L	0.0003 lbs/day	0.02 µg/L	0.00002 lbs/day
Molybdenum	0.6 µg/L	0.0005 lbs/day	2.1 µg/L	0.0017 lbs/day
Nickel	2.4 µg/L	0.002 lbs/day	1.0 µg/L	0.0008 lbs/day
Selenium	0.3 µg/L	0.0002 lbs/day	0.0 µg/L	0.0 lbs/day
Silver	0.8 µg/L	0.001 lbs/day	0.3 µg/L	0.0003 lbs/day
Zinc	126 µg/L	0.11 lbs/day	54.9 µg/L	0.049 lbs/day

DESCRIPTION OF THE WASTEWATER TREATMENT FACILITY AND DISCHARGE OUTFALL

The treatment process at the new facility will include preliminary treatment through a rotary screen, and an aerated grit chamber, influent flow measurement with a Parshall flume, biological treatment in two oxidation ditches followed by solids settling in two secondary clarifiers, disinfection with an ultraviolet (UV) light disinfection system, and effluent flow measurement with a Parshall flume. A gravity belt thickener will be used for biosolids thickening. Thickened biosolids will be transported to the County's Central Kitsap WWTP for further treatment and utilization.

Secondary treated and disinfected effluent from the facility will be discharged to Appletree Cove, Puget Sound, via an 18-inch diameter concrete-coated steel pipe that is lined with polyurethane. The new outfall pipe extends 5350 feet into Appletree Cove to a depth of 169 feet below mean lower low water (MLLW). A diffuser at the end of the outfall pipe consists of two 3-inch diameter ports at 50-foot spacing.

Diagrams showing the new treatment facility and outfall location are included in Appendix C.

RESIDUAL SOLIDS

The treatment facility removes solids during the treatment of the wastewater at the headworks (grit and screenings), and secondary clarifiers (sludge/biosolids), in addition to incidental solids (rags, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, and screenings will be drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifiers will be thickened by a gravity belt thickener, and then transported to the County's Central Kitsap WWTP for further treatment and utilization.

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PERMIT STATUS

The existing permit (number WA-002326-4) issued to the County on October 5, 2001, expires on June 30, 2006. The existing permit is for the existing contact stabilization process WWTP. The new oxidation ditch WWTP, which is currently under construction, is located approximately one mile to the southwest of the existing WWTP. To reflect the new wastewater treatment process, new location, and revised effluent limitations and design criteria for the new WWTP, a new NPDES permit must be issued to the County. An NPDES permit application for the new facility was submitted to the Department on September 29, 2004, and accepted by the Department on October 11, 2004.

SUMMARY OF INSPECTIONS

A Class I inspection of the existing WWTP was conducted on June 21, 2004, by the Department's Northwest Regional Office (NWRO) staff. Construction inspection of the new WWTP was conducted on the same day. As noted in the Class I inspection report, the existing WWTP is many years past its design life, and it is difficult to keep it operating. The operations staff has difficulties keeping the plant effluent in compliance with the permit limits. Since July 2003, with some operational changes at the plant, the staff has better luck keeping the effluent in compliance with the permit limits. As noted in the construction inspection report, the new WWTP, new main pump station (number 71), and new outfall are all expected to be completed and on-line between February and April 2005. The inspection reports are on file at the Department's NWRO office.

SUMMARY OF COMPLIANCE WITH THE EXISTING PERMIT

The existing package plant is many years past its design life, and it is difficult to keep it operating. The operations staff has difficulties keeping the plant effluent in compliance with the permit limits. Based on the discharge monitoring reports (DMRs) submitted to the Department, there were many violations of the influent design criteria and effluent limits during the term of this permit. Since July 2003, with some operational changes at the plant, the staff has been more successful in keeping the effluent in compliance with the permit limits most of the time. It should be noted that the County had begun the planning process for building the new plant in 1994. However, the process was significantly delayed due to the citizens' appeal of the SEPA procedure, preventing construction of the new plant. In 2003, the County Hearings Examiner gave a final approval to the SEPA process. The County began constructing the new plant and outfall in January 2004.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

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The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances, the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for the new treatment facility taken from *Final Kingston Wastewater Facilities Plan*, CH2M Hill, December 1999, are as follows:

Table 1: Design Criteria for Kingston WWTP.

Parameter	Design Criteria
Average flow for the maximum month	0.292 MGD
BOD ₅ influent loading for the maximum month	585 lbs./day
TSS influent loading for the maximum month	585 lbs./day

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

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The following technology-based limits for pH, fecal coliform, CBOD₅, and TSS are taken from Chapter 173-221 WAC:

Table 2: Technology-based Limits.

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
CBOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 25 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 40 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

Note: The Permittee has requested continuation of the CBOD₅ limits instead of the standard BOD₅ limits. This request is granted as allowed by the State and Federal regulations. The average monthly and weekly limits for CBOD₅ are 5 mg/l lower than the standard BOD₅ limits.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly average effluent mass loadings for CBOD₅ = 0.292 MGD (maximum monthly design flow) x 25 mg/L (concentration limit) x 8.34 (conversion factor) = 61 lbs/day.

Weekly average effluent mass loadings for CBOD₅ = 0.292 MGD (maximum monthly design flow) x 40 mg/L (concentration limit) x 8.34 (conversion factor) = 98 lbs/day.

Monthly average effluent mass loadings for TSS = 0.292 MGD (maximum monthly design flow) x 30 mg/L (concentration limit) x 8.34 (conversion factor) = 73 lbs/day.

Weekly average effluent mass loadings for TSS = 0.292 MGD (maximum monthly design flow) x 45 mg/L (concentration limit) x 8.34 (conversion factor) = 110 lbs/day.

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SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the water quality standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

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The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the water body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known available and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Appletree Cove, Puget Sound, which is designated as a Class AA marine water body in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Surface Water Quality Criteria for Class AA Marine Waters:

Parameter	Criteria
Fecal Coliforms	14 organisms/100 mL maximum geometric mean
Dissolved Oxygen	7 mg/L minimum
Temperature	13 degrees Celsius maximum
pH	7.0 to 8.5 standard units
Turbidity	Less than 5 NTU above background
Toxics	No toxics in toxic amounts

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC. Mixing zone boundaries for discharges to estuaries such as Appletree Cove, Puget Sound, are defined as follows:

- (a) In estuaries, mixing zones, singularly or in combination with other mixing zones, shall:
 - (i) Not extend in any horizontal direction from the discharge port(s) for a distance greater than two hundred feet plus the depth of water over the discharge port(s) as measured during mean lower low water; and
 - (ii) Not occupy greater than twenty-five percent of the width of the water body as measured during mean lower low water.
- (b) In estuarine waters, a zone where acute criteria may be exceeded shall not extend beyond ten percent of the distance established in (a) above, as measured independently from the discharge port(s).
- (c) Vertical limitations for both chronic and acute zones is the depth of water over the discharge port(s) as measured during mean lower low water (MLLW).

The acute and chronic mixing zone boundaries for the (new) facility's discharge are determined based on the above definitions and are specified in Condition S1.B of the proposed permit.

The dilution ratios of effluent to receiving water that occur within these zones have been determined at the critical condition by using near-field and far-field dilution modeling. The modeling provides dilution predictions under critical (worst case) receiving water conditions and for the range of receiving water conditions expected at the discharge site. The dilution modeling and results are discussed in the "*Kingston Replacement Outfall Engineering Report*," CH2M Hill, January 2000. The design criteria specified in the proposed permit for the new facility are

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for the year 2012 conditions - diffuser with two 3-inch diameter ports at 50-foot spacing, and a maximum month flow of 0.292 MGD. Model-predicted dilutions for the 2012 discharge conditions, which are used in this permit, are as follows:

Dilution Ratios for the Year 2012 Conditions:

Criteria	Acute	Chronic
Aquatic Life	289:1	1,390:1

It should be noted that dilution modeling was based on the assumption of the outfall depth of 153 feet below MLLW. However, the actual outfall depth is 169 feet below MLLW. Therefore, the dilution ratios are expected to be higher than those stated in the above table.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants—their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

CBOD₅—This discharge with technology-based limitations results in a small amount of CBOD loading relative to the large amount of dilution (1,390:1) occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature—The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 10.2° C and the highest (95% percentile) effluent temperature is 21° C. The predicted resultant temperature at the boundary of the chronic mixing zone is 10.208° C and the incremental rise is 0.008° C.

Under critical conditions, there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH—Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal Coliform—The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 1,390:1.

Under critical conditions, there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

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Toxic Pollutants—Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

This is a new facility and therefore, no effluent monitoring data is available. However, based on the monitoring data available from the existing facility, the following toxics are expected to be present in the discharge: ammonia, and low levels of heavy metals. During the development of the existing permit for the existing facility, the determination of the reasonable potential for ammonia and heavy metals to exceed the water quality criteria at the critical conditions was evaluated with procedures given in EPA, 1991, to determine whether or not effluent limitations would be required in the permit. Calculations using all applicable data resulted in a determination that, except for copper, there was no reasonable potential for the discharge to cause a violation of water quality standards for ammonia and heavy metals. Copper barely failed the reasonable potential analysis at that time. In addition, effluent copper analyses were conducted in the form of “total copper,” and not “total recoverable copper.” The water quality standards are in the form of “total recoverable copper.” Therefore, no limits for copper were placed in the existing permit.

The new facility uses extended aeration treatment technology, which is expected to produce much better quality effluent than the existing (aging) treatment facility which has little operation controls. The new facility is expected to produce effluent with much lower ammonia concentrations. The heavy metals concentrations are also expected to be lower in the new facility effluent. In addition, the dilution ratios with the new deep-water outfall are much greater than those for the existing facility. Therefore, no reasonable potential for the discharge to cause a violation of water quality standards for ammonia and heavy metals is expected.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC (see Appendix D). Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

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HUMAN HEALTH

Washington's Water Quality Standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

This is a new facility, and therefore, no effluent monitoring data is available. The facility primarily treats domestic wastewater. Based on the monitoring data available from the existing facility, effluent from the new facility is not expected to contain human health-based chemicals of concerns, except for some metals at very low concentrations. During the development of the existing permit, a preliminary analysis of the metals in the effluent from the existing facility indicated no reasonable potential for the discharge to violate the human health-based water quality criteria. Since the new facility will produce much better quality effluent, and the new outfall will provide much greater dilution in the receiving waters, no reasonable potential for the discharge to cause a violation of the numeric health-based criteria is expected. The discharge will be reevaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated Aquatic Sediment Standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

No effluent data exist for this facility since it is new. Therefore, it is not possible to determine at this time the potential for this discharge to cause a violation of Sediment Quality Standards. If the Department determines in the future that there is a potential for violation of the Sediment Quality Standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF THE PROPOSED EFFLUENT LIMITS WITH THE EXISTING EFFLUENT LIMITS

The proposed effluent (concentration) limits are identical to the existing limits as shown in the table below. Since the design flow for the new facility is approximately two times the design flow for the existing facility, the proposed mass emission limits (lbs/day) are approximately twice the existing mass emission limits as shown in Condition S1.A of the proposed permit.

Existing and Proposed Effluent Limits (Monthly Average Concentrations):

Parameter	Existing Effluent Limits	Proposed Effluent Limits
CBOD ₅ (monthly average)	25 mg/L	25 mg/L
TSS (monthly average)	30 mg/L	30 mg/L
Fecal Coliform (monthly average)	200/100 mL	200/100 mL
pH (standard units)	6.0 to 9.0	6.0 to 9.0

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 2002) for activated sludge plants with less than 2 million gallons per day (MGD) average design flow and for plants with oxidation ditches.

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory analyses for parameters required in this permit are conducted at the County's Central Kitsap (CK) WWTP. The laboratory at the CK WWTP is accredited for all of the parameters to be monitored at the Kingston WWTP.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S4 restricts the amount of flow, BOD₅, and TSS.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S5 as authorized under RCW 90.48.110, WAC 173-220-150, WAC 173-230, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge (biosolids) from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Bremerton-Kitsap County Health Department.

PRETREATMENT

Primary sources of wastewater tributary to the facility are domestic sewage from residential and light commercial activities in the service area. Since the pretreatment program has not been delegated to the Permittee, the pretreatment Condition S8 in the permit is a standard condition derived from the Federal Regulation 40 CFR 403.5.

ADDITIONAL TESTING OF EFFLUENT

To provide the required data for Part B6 of the NPDES permit application for the next permit cycle, Condition S8 of the permit requires additional monitoring of final effluent for some conventional pollutants.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for the full allowable five (5)-year period.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

Washington State Department of Ecology

Laws and Regulations (<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology

1994. Permit Writer's Manual. Publication Number 92-109

Kitsap County Department of Public works

December 1999. Final Kingston Wastewater Facilities Plan, CH2M Hill

January 2000. Kingston Replacement Outfall Engineering Report, CH2M Hill

February 2000. Project Manual for Construction of Kingston Wastewater Treatment Plant and Pump Station Number 71, CH2M Hill

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application was published on October 16 and 23, 2004, in *The North Kitsap Herald* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on December 22, 2004, in *The North Kitsap Herald* to inform the public that draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone (425) 649-7201 or by writing to the address listed above.

APPENDIX B—GLOSSARY

Acute Toxicity—The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART—An acronym for “all known, available, and reasonable methods of prevention, control, and treatment.”

Ambient Water Quality—The existing environmental condition of the water in a receiving water body.

Ammonia—Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation—The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation—The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)—Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅—Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass—The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅—The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR Part 136.

Chlorine—Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Chronic Toxicity—The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)—The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)—The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling—A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity—Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring—Uninterrupted, unless otherwise noted in the permit.

Critical Condition—The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor—A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report—A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Fecal Coliform Bacteria—Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample—A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial User—A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater—Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)—"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference—A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act [RCRA], and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility—A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation—The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)—The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Minor Facility—A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone—A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)—The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass-through—A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State Water Quality Standards.

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User—A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass-through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)—A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)—

1. All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and
2. Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of nondelegated POTWs or to the POTW in the case of delegated POTWs.

State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)—Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset—An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit—A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

The diagram illustrates the wastewater treatment process at the Kingston Sewerage Treatment Plant, starting from raw sewage intake and ending with effluent discharge.

- Inflow:** Raw sewage enters the plant through a pipe labeled "RAW SEWAGE".
- Primary Treatment (Stages 1-2):** The sewage passes through a "ROTARY SCREEN" (Stage 1) which separates large debris. The remaining sludge (RS) goes to a "GRIT CHAMBER" (Stage 2). The grit chamber has two outputs: one leading to a "GRIT CYCLONE AND CLASSIFIER" (Stage 3) and another leading to a "MANUAL BAR SCREEN".
- Grit Handling:** The "GRIT CYCLONE AND CLASSIFIER" (Stage 3) separates grit (GR) from water (W3). The grit is sent "TO DISPOSAL". The water (W3) returns to the main flow.
- Secondary Treatment (Stages 4-6):** The effluent from the manual bar screen flows into "OXIDATION DITCHES". The water then passes through a "FLOW SPLITTER" and "SECONDARY CLARIFIERS" (Stage 4). The clarifiers have multiple outlets: "RAS" (return activated sludge), "SCUM", "SE" (sludge), and "SS" (settled solids).
- Solid Management (Stages 7-8):** Solids are pumped by a "SOLIDS PUMP" (Stage 7) to a "GRAVITY BELT THICKENER" (Stage 8). The thickener produces "TWAS" (thickened waste activated sludge) and "W3" (water). The TWAS is sent to a "TWAS TANK" (Stage 9) where it is aerated (AFD) before being returned to the oxidation ditches. The W3 is sent to a "NON-POTABLE WATER SYSTEM".
- Final Disinfection (Stage 10):** The treated effluent passes through a "UV DISINFECTION" unit (Stage 10) before being discharged as "PLANT EFFLUENT TO OUTFALL".
- Air Supply:** A "KINGSTON PUMP STATION (PS-711)" provides air (AIR) to the rotary screen, grit chamber, and TWAS tank.
- Other Components:** A "WAS TANK" (wastewater storage tank) receives input from the secondary clarifiers and has its own pump system ("RAS PUMPS") returning water to the oxidation ditches.

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT
OUTFALL LOCATION



APPENDIX D—EVALUATION OF WET TESTING REQUIREMENTS**DISCHARGE RANKING SYSTEM FOR WET TESTS****A. Toxicity Likelihood:**

1. 5 points Uses, stores, produces as a product or waste, or transfers hazardous substances listed in 40 CFR 302.4 with a statutory code of 1 or 2 with adequate Best Management Practices (adequate secondary containment, good housekeeping, good employee training, thorough self-inspection, sufficient emergency planning and spill control equipment, etc.) **0 point**
2. 20 points Uses, stores, produces as a product or waste, or transfers hazardous substances listed in 40 CFR 302.4 with a statutory code of 1 or 2 with inadequate Best Management Practices (no or undersized secondary containment, poor housekeeping, little employee training, poor self-inspection, little emergency planning, insufficient spill control equipment, history of spills which have reached receiving water, etc.) **0 point**
3. 15 points Discharges in the effluent any toxic pollutant listed in Appendix D of 40 CFR Part 122 for which there are no water quality criteria for aquatic life protection listed in 40 CFR 131.36 (b)(1) or WAC 173-201A-040(3) **0 point**
4. 15 points Discharger belongs in an industry category identified in 40 CFR Part 122, Appendix A **0 point**
5. 15 points Discharger is a municipal facility which receives a discharge from any industry category identified in Appendix C of 40 CFR Part 403, unless the municipality has an adequate pretreatment program which establishes and enforces local limits **0 point**
6. 10 points Any facility with toxicity detected during past acute toxicity testing based on less than 80% survival in 100% effluent **0 point**
7. 15 points Any facility with known or suspected receiving water impacts **0 point**

Sum of Scores in Part A:**0 point**

B. Potential for Impact:

1. Average Annual Discharge Flow Volume:

- | | | |
|---------------------|--------------------------|-----------------|
| a. <u>5 points</u> | Flow < 0.5 mgd | 5 points |
| b. <u>10 points</u> | Flow 0.5 mgd to 12.5 mgd | |
| c. <u>15 points</u> | Flow 12.5 mgd to 25 mgd | |
| d. <u>20 points</u> | Flow 25 mgd to 37.5 mgd | |
| e. <u>25 points</u> | Flow 37.5 mgd to 50 mgd | |
| f. <u>30 points</u> | Flow > 50 mgd | |

2. Chronic Critical Effluent Concentration at Edge of Mixing Zone:

- | | | | |
|---------------------|-------------------------------------|-----------------------------|----------------|
| a. <u>1 point</u> | CCEC < 0.1% effluent | $= (1/1390) * 100 = 0.07\%$ | 1 point |
| b. <u>5 points</u> | CCEC = 0.1% effluent to 2% effluent | | |
| c. <u>10 points</u> | CCEC = 2% effluent to 4% effluent | | |
| d. <u>15 points</u> | CCEC = 4% effluent to 6% effluent | | |
| e. <u>20 points</u> | CCEC = 6% effluent to 8% effluent | | |
| f. <u>25 points</u> | CCEC = 8% effluent to 10% effluent | | |
| g. <u>30 points</u> | CCEC > 10% effluent | | |

Sum of Scores in Part B:

6 points

C. Multiply the sum of scores from Part A by the sum of scores in Part B to rank the discharge:

Score in Part C:

0 point

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

D. Discharge Ranks*:

Rank 1 - greater than 2500 points

Rank 2 - 1500 points to 2500 points

Rank 3 - 750 points to 1500 points

Rank 4 - 100 points to 750 points

Rank 5 - less than 100 points

*Borderline values go to any adjacent group at the discretion of the permit manager.

TESTING FREQUENCY

DISCHARGE RANK	EFFLUENT CHARACTERIZATION	
	Acute Toxicity	Chronic Toxicity
RANK 1	6/year, 1 fish 1 invert.	6/year, 1 fish 1 invert. 1 algal*
RANK 2	6/year, 1 fish 1 invert.	4/year, 1 fish 1 invert. 1 algal*
RANK 3	4/year, 1 fish 1 invert.	4/year, 1 fish 1 invert.
RANK 4	4/year, 1 fish 1 invert.	2/year, 1 fish 1 invert.
RANK 5	2/year, 1 fish 1 invert.	2/year, 1 fish 1 invert.

* optional at permit manager's discretion

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

APPENDIX E—RESPONSE TO COMMENTS



January 21, 2005

Water Quality Permit Coordinator
 Northwest Regional Office
 Washington Department of Ecology
 3190 160th Avenue SE
 Bellevue, WA 98008-5452
 tml461@ecy.wa.gov

RECEIVED
 JAN 24 2005
 DEPT OF ECOLOGY

RE: Draft NPDES permit – Kingston Wastewater Treatment Plant, Kingston, Kitsap County

Dear Permit Coordinator,

Thank you for the opportunity to comment on the draft National Pollutant Discharge Elimination System (NPDES) permit for the Kingston Wastewater Treatment Plant. The upgrade of Kingston's wastewater treatment system is a good opportunity to improve water quality in the vicinity of Appletree Cove.

People for Puget Sound is a citizens' organization whose mission is to protect and restore Puget Sound and the Northwest Straits. We focus on water quality and habitat, advocating that the State of Washington devote more resources to the prevention of further degradation of the Sound.

Nearshore Health. As noted in the Puget Sound Action Team's recent *State of the Sound 2004* report, water and sediment quality play an integral role in the health of the nearshore. Wastewater and industrial discharges and urban runoff contribute pollutants, turbidity, and stressors (such as temperature) which can decrease water quality, reduce the penetration of sunlight to submerged vegetation or cause vegetation to be covered over with sediment, impact swimming beaches and other recreational uses, and diminish commercial activities such as shellfish harvesting. Furthermore, pollutants, especially persistent toxins, can become buried and concentrated in sediments, only to be released over time by burrowing animals or dredging and to be accumulated into the Sound's food web. Juvenile salmon and other wildlife depend upon a healthy nearshore ecosystem for refuge, shelter, and food.

Persistent bioaccumulative toxins (PBTs). People For Puget Sound is especially concerned about persistent bioaccumulative toxins (PBTs) that are discharged into the Sound. Because by definition PBTs are persistent, neither the passage of time nor dilution can immediately rid the Sound of their effects. Since organisms become contaminated with PBTs by direct contact with or ingestion of toxics, and by eating organisms that they have eaten or absorbed contaminants, PBTs accumulate and persist in the Puget Sound food chain from bottom-

MAIN OFFICE	NORTH SOUND	SOUTH SOUND
911 Western Avenue, Suite 580 Seattle, WA 98104 (206) 382-7007 fax (206) 382-7006 people@pugetsound.org	407 Main Street, Suite 201 Mount Vernon, WA 98273 (360) 336-1931 fax (360) 336-5422 northsound@pugetsound.org	1063 Capitol Way South, Suite 206 Olympia, WA 98501 (360) 754-9177 fax (360) 534-9371 southsound@pugetsound.org



FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Page 2

dwelling organisms to fish and other wildlife to the top predators. The accumulation of toxic contaminants has become so high at the top level of the Puget Sound food web that our resident orca whales are now among the most contaminated marine mammals in the world. It is critical that potential PBTs at this site be addressed.

Our specific comments follow:

1. **Mixing zones and dilution.** People For Puget Sound is opposed to the use of mixing zones for persistent bioaccumulative toxins. The mixing zone regulatory approach does not take into account the cumulative impact of loading of pollutants into Puget Sound. Water quality in Puget Sound is ultimately impaired by the addition of pollutants, especially toxic chemicals, whether or not they are diluted. The concentration of copper and other metals in wastewater at the actual discharge point (i.e., end-of-the-pipe) must meet biologically appropriate water quality standards. We request that effluent limitations for this facility be placed on the discharge itself, not on a mixing zone, for persistent bioaccumulative toxins.
2. **Thorough one-time monitoring of toxic chemicals.** It is not clear from the Fact Sheet that a complete priority pollutant sampling of the influent for this new facility (based on the influent to the existing facility) has been conducted. There is no evidence provided that the influent and effluent are free of chemicals such as phthalates, organic solvents, and other toxic contaminants.
3. **Total annual loads.** The total loads of copper and other toxic contaminants to Puget Sound from this facility should be reported.

As an additional note: We would appreciate Fact Sheets that provide more data. For example, the influent and effluent concentration levels of all constituents should be included as well as the status of the receiving water body.

If you have any questions, please feel free to call me at (206) 382-7007 X215.

Sincerely,



Heather Trim,
Urban Bays Project Coordinator

cc: EPA

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-3452 • (425) 649-7000

February 28, 2005

Ms. Heather Trim
Urban Bays Project Coordinator
People For Puget Sound
911 Western Ave, Suite 580
Seattle, WA 98104

Dear Ms. Trim:

Re: Draft NPDES Permit Number WA-003207-7 and Fact Sheet
Kingston Wastewater Treatment Plant

Thank you for your comments on the above-referenced draft NPDES permit and fact sheet for Kingston Wastewater Treatment Plant (WWTP). Our responses to your comments are as follows:

- (1) **Mixing Zones and Dilution:** The Water Quality Standards (WAC 173-201A) allow the Department of Ecology (Department) to authorize mixing zones around a point of discharge in establishing effluent limits. Mixing zones are areas where the water quality standards may be exceeded but they are small enough so as not to interfere with beneficial uses. Mixing zones reflect a regulatory recognition that the concentrations and effects of most pollutants diminish rapidly after discharge due to dilution.
- (2) **Thorough one-time monitoring of Toxic Chemicals:** The existing Kingston wastewater treatment plant (WWTP) is a small facility with a maximum monthly design flow of 150,000 gallons per day. Primary sources of wastewater tributary to the facility are domestic sewage from residential and light commercial activities in Kingston. In July 1995, the facility influent was analyzed for priority pollutants. Most parameters analyzed measured below detection limits. The parameters measured above the detection limits were found to be at very low concentrations. For example the influent copper concentration was 84 ug/L. Please note that these analyses were conducted for the facility influent. The facility effluent was not analyzed for priority pollutants at that time. However, the facility staff has been analyzing the facility influent and effluent for metals since 1996. The monitoring data shows very low levels of metals in the influent and effluent. For example, monthly average copper discharged from Kingston WWTP in the year 2003 was 0.011 pounds per day. Based on these data, priority pollutants are not expected to be present at levels of concern in Kingston WWTP influent or effluent. As stated in the fact sheet, the existing facility was constructed in 1974, is many years past its design life, and difficult to

FACILITY NAME: KINGSTON WASTEWATER TREATMENT PLANT

Ms. Heather Trim
People For Puget Sound
February 28, 2005
Page 2

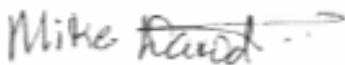
operate. The new WWTP is expected produce much better quality effluent. Therefore, the proposed permit does not contain requirements for complete priority pollutant sampling and analysis of the facility influent or effluent.

- (3) **Total Annual Loads:** As explained in response (2) above, priority pollutants are not expected to be present in the facility effluent at levels of concern. Therefore, the proposed permit does not contain requirements for priority pollutants monitoring for the facility effluent. As stated in response (2) above, the facility staff has been analyzing the facility influent and effluent for metals for since 1996. The monitoring data shows very low levels of metals to be present in the influent and effluent. The influent and effluent metals results for the year 2003 are included in the revised fact sheet.
- (4) **Influent and Effluent Data in the Fact Sheet:** As per your comments, the fact sheet has been revised to include influent and effluent concentrations of monitored parameters at the existing facility, for the year 2003.
- (5) **Status of the Receiving Water Body:** As stated in the fact sheet, the receiving water body (Appletree Cove) is classified under Class AA Marine Water in WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington.

Based on the above responses, the Department will revise the fact sheet to include influent and effluent concentrations of monitored parameters at the existing facility, for the year 2003. No other revisions in the permit are proposed. When the final permit is issued to the Permittee, a copy of the permit and fact sheet will be mailed to you for your records.

If you have further questions or comments, please contact me at this office address or call me at (425) 649-7027.

Sincerely,



Mike Dawda
Water Quality Section
Northwest Regional Office

MD:dh